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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PCT0300601D	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/JP2003/010428	International filing date (day/month/year) 19 August 2003 (19.08.2003)	Priority date (day/month/year) 20 August 2002 (20.08.2002)
International Patent Classification (IPC) or national classification and IPC H01M 8/02, 8/10		
Applicant DAIDO TOKUSHUKO KABUSHIKI KAISHA		

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 6 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
  - ☐ (sent to the applicant and to the International Bureau) a total of \_\_\_\_\_ sheets, as follows:
    - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - ☐ (sent to the International Bureau only) a total of \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
- This report contains indications relating to the following items:
 

<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input checked="" type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input type="checkbox"/> Box No. VIII	Certain observations on the international application

Date of submission of the demand 19 January 2004 (19.01.2004)	Date of completion of this report 24 September 2004 (24.09.2004)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2003/010428

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is language of a translation furnished for the purpose of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☒ The international application as originally filed/furnished
- ☐ the description:
- pages \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the claims:
- pages \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_, as amended (together with any statement) under Article 19
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:
- pages \_\_\_\_\_, as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP03/10428

## Box No. IV Lack of unity of invention

1. ☐ In response to the invitation to restrict or pay additional fees the applicant has:
- ☒ restricted the claims.
  - ☒ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☐ neither restricted nor paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☒ not complied with for the following reasons:

In order that a group of inventions described in claims satisfies the requirement of unity of invention, a special technical feature for keeping the group of inventions so linked as to form a single general inventive concept must exist. However, judging from the description of all the claims of the present international description, there is no technical feature that keeps the group of inventions described in claims 1-37 linked.

So, it is evident that the group of inventions described in claims 1-37 does not satisfy the requirement of unity of invention.

The number of groups of subject matters, i.e., the number of inventions, which are described in the claims of the present international application and respectively so linked as to form a single general inventive concept, is examined below.

The present international application describes fifteen subject matters of independent claims 1, 2, 4, 11, 12, 13, 14, 15, 16, 17, 22, 24, 26, 30 and 35. In this case, it is considered that (1) claims 1, 2, 4 and 11 are linked with the technical matter, "A metal member for a fuel cell, disposed in contact with a cell body having a solid polymeric membrane as an electrolyte held between a pair of electrodes, in which an Au film is formed on the main surface of a sheet-like metal substrate formed of a metal more base than Au," (2) claims 12-17 are linked with the technical matter, "austenite stainless steel for solid polymer fuel cells," (3) claims 22, 24 and 26 are linked with the solid polymer fuel cell material per se described in claim 22, and (4) claims 30 and 35 are linked with the technical matter, "a material having a thin film of a precious metal formed at least partially on the surface of a metal substrate of a corrosion resistant conductive member."

4. Consequently, this report has been established in respect of the following parts of the international application:

- ☐ all parts.
- ☒ the parts relating to claims Nos. 1-11, 30-37

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP03/10428

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

## 1. Statement

Novelty (N)	Claims	1-3, 11, 30-34, 36-37	YES
	Claims	4-10, 35	NO
Inventive step (IS)	Claims	1-3, 11	YES
	Claims	4-10, 30-34, 35, 36-37	NO
Industrial applicability (IA)	Claims	1-3, 4-10, 11, 30-34, 35, 36-37	YES
	Claims		NO

## 2. Citations and explanations (Rule 70.7)

Document 1: JP, 2001-297777, A (Matsushita Electric Industrial Co., Ltd.), 26 October, 2001 (26.10.01)  
Document 2: JP, 2002-75399, A (Hitachi, Ltd.), 15 March, 2002 (15.03.02)

The subject matter of claim 4 does not appear to be novel in view of document 1 cited in the ISR. Document 1 discloses a constitution corresponding to a metal member for a fuel cell, in which (1) a solid polymeric membrane is provided as an electrolyte, (2) a sheet-like electrode is disposed with its first main surface kept in contact with the membrane, (3) a sheet-like metal substrate formed of a metal more base than Au is disposed in contact with the second main surface of the electrode and has projections and depressions formed on its main surface facing the said electrode, being used as a separator having the tips of the projections kept in contact with the said electrode and having the depressions used as gas passages for supplying a fuel gas or oxidizing agent gas to the said electrode, and (4) a 1 to 500 nm thick Au film is formed on both (a) the tip surfaces in contact with the said electrode, of the said projections of the metal substrate, and (b) the main surface region other than the said tip surfaces.

The subject matter of claim 5 does not appear to be novel in view of document 1 cited in the ISR. Document 1 also discloses a metal member for a fuel cell in which an Au film is formed in such a manner that the exposed regions of the substrate are located in a dispersed manner.

The subject matters of claims 6 and 8 do not appear to be novel in view of document 1 cited in the ISR. Document 1 also discloses a metal member for a fuel cell in which a metal substrate is formed of SUS316, etc.

The subject matter of claim 9 does not appear to be novel in view of document 1 cited in the ISR. The metal member for a fuel cell disclosed in document 1 corresponds to the one disposed in a sulfuric acid environment of pH 1 to 6 while the fuel cell is used.

The subject matter of claim 10 does not appear to be novel in view of document 1 cited in the ISR. The fuel cell disclosed in document 1 has a cell body having a solid polymeric membrane as an electrolyte held between a pair of electrodes.

The subject matters of claims 30-34 and 36 do not appear to involve an inventive step in view of documents 1 and 2 cited in the ISR. A person skilled in the art could have easily applied the publicly known technical matter disclosed in document 2, in which when a corrosion resistant layer is formed on the surface of a metal substrate, a layer controlled in the amount of impurities is formed between the metal substrate and the corrosion resistant layer, to the metal separator for a fuel cell disclosed in document 1, in which a 100 nm or thinner precious metal layer is formed on the surface of austenitic stainless steel.

## Supplemental Box

In case the space in any of the preceding boxes is not sufficient.  
Continuation of IV.3

However, (1) the technical matter keeping claims 1, 2, 4 and 11 linked, "A metal member for a fuel cell, disposed in contact with a cell body having a solid polymeric membrane as an electrolyte held between a pair of electrodes, in which an Au film is formed on the main surface of a sheet-like metal substrate formed of a metal more base than Au," (2) the technical matter keeping claims 12-17 linked, "austenite stainless steel for solid polymer fuel cells," and (3) the technical matter keeping claims 30 and 35 linked, "a material having a thin film of a precious metal formed at least partially on the surface of a metal substrate of a corrosion resistant conductive member" are respectively well-known technical matters and cannot be special technical features, as can be seen from the description of the "Background Art" in the specification of the present international application. Furthermore, the austenite stainless steel per se for solid polymer fuel cells described in claim 12 and keeping claims 12 and 15 linked, among claims 12 and 15 and claims 13, 14, 16 and 17 respectively having a portion duplicating the chemical composition ranges of the austenite stainless steel for solid polymer fuel cells is described in documents of the prior art, for example, document [JP, 2000-309854, A (Sumitomo Metal Industries, Ltd.), 7 November, 2000 (07.11.00)]. So, it cannot be a special technical feature. However, the technical matter keeping claims 1, 2 and 11 linked, "A metal member for a fuel cell, disposed in contact with a cell body having a solid polymeric membrane as an electrolyte held between a pair of electrodes, in which (1) an Au film is formed on the main surface of a sheet-like metal substrate formed of a metal less noble than Au, and (2) subsequently the said metal substrate is cut" appears to be a special technical feature. Furthermore, the solid polymer fuel cell material per se described in claim 22 and keeping claims 22, 24 and 26 linked also appears to be a special technical feature. No other matter keeping any plural subject matters of claims linked can be found.

Therefore, it is considered that fifteen subject matters of independent claims in the present international application can be classified into the following eight inventions: claims 1, 2 and 11, claim 4, claim 12, claims 13, 14, 16 and 17, Claim 15, claims 22, 24 and 26, claim 30 and claim 35. Furthermore, it is considered that the subject matters of the dependent claims can be classified as independent claims quoting the technical matters.

For the reasons as described above, the applicant was asked to restrict the scope of claims or to pay an additional fee. In response, the applicant deleted claims 12-29 for restriction and paid the additional fee.

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP03/10428

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.  
Continuation of V.2

The subject matter of claim 35 does not appear to be novel in view of document 1 cited in the ISR. Document 1 discloses a method for producing a material having a thin film of a precious metal formed at least partially on the surface of a metal substrate, comprising the step of removing a contaminated film existing on the surface of the metal substrate for exposing a clean surface, and immediately forming a precious metal film.

The subject matter of claim 37 does not appear to involve an inventive step in view of documents 1 and 2 cited in the ISR. The fuel cell disclosed in document 1 has a cell body having a solid polymeric membrane as an electrolyte held between a pair of electrodes.

The subject matters of claims 1-3 and 11 appear to be novel and to involve an inventive step in view of the documents cited in the ISR. The metal member for a fuel cell described in claims 1-3 and the method for producing a metal member for a fuel cell described in claim 11 are neither described in any of the documents cited in the ISR nor obvious to a person skilled in the art.